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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/789,040

02/27/2004

Gopalan Raman

200400043-1

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05/02/2006

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EXAMINER

GOLDBERG, BRIAN J

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/789,040

Applicant(s)

RAMAN, GOPALAN

Examiner

Brian Goldberg

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-20, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 11 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/27/04, 6/20/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 24-42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 3/15/06.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Raman (US 5912685).
3. Regarding claim 1, Raman discloses "a chamber (101 of Fig 1); a first fluid channel and a second fluid channel each communicated with the chamber (301, 303 of Fig 4); a first peninsula extended along the first fluid channel and a second peninsula extended along the second fluid channel (401, 403 of Fig 4); and a first sidewall extended between the first peninsula and the chamber, and a second sidewall extended between the second peninsula and the chamber (walls between 401, 403 and 109 in Fig 4), wherein the first sidewall is oriented at a first angle to the chamber and the second sidewall is oriented at a second angle to the chamber, wherein the second angle is

different from the first angle (angle between 401 and 101 appears different and opposite of angle between 403 and 101 of Fig 4)."

4. Regarding claim 2, Raman discloses "a resistor formed in the chamber (109)."

5. Regarding claim 3, Raman discloses "a width of the first fluid channel along the first sidewall and along a portion of the first peninsula is substantially constant, and a width of the second fluid channel along the second sidewall and along a portion of the second peninsula is substantially constant (the widths of the channels as seen in Figs 3 and 4 are substantially constant)."

6. Regarding claim 4, Raman discloses "an island separating the first fluid channel and the second fluid channel (203)."

7. Regarding claim 5, Raman discloses "the island is asymmetrical (see 203 of Fig 4)."

8. Regarding claim 6, Raman discloses "the island has a first side oriented substantially parallel with the first peninsula and a second side oriented substantially parallel with the second peninsula (the side labeled L1' is substantially parallel to 401 and the side labeled L2' is substantially parallel to 403 in Fig 4)."

9. Regarding claim 7, Raman discloses "the island has a first chamfered corner oriented substantially parallel with the first sidewall and a second chamfered corner oriented substantially parallel with the second sidewall (the upper corners of 203 in Fig 4 are chamfered creating sides parallel to the sidewalls of 401 and 403)."

10. Regarding claim 8, Raman discloses "the first sidewall and the second sidewall are substantially linear (walls of 401 and 403 are substantially linear)."

Art Unit: 2861

11. Claims 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Burke et al. (US 5666143).

12. Regarding claim 13, Burke et al. disclose "a chamber (101 of Fig 1); a first fluid channel and a second fluid channel each communicated with the chamber (317, 315 of Fig 5); and an island separating the first fluid channel and the second fluid channel (305 of Fig 5), wherein the island is substantially rectangular and has a first chamfered corner along the first fluid channel and a second chamfered corner along the second fluid channel, wherein the first chamfered corner is oriented at a first angle and the second chamfered corner is oriented at a second angle different from the first angle (305 is substantially rectangular and has its right-most corners chamfered at opposite angles)."

13. Regarding claim 14, Burke et al. disclose "a resistor in the chamber (109' of Fig 5)."

14. Regarding claim 15, Burke et al. disclose "a first peninsula extended along the first fluid channel and a second peninsula extended along the second fluid channel (503, 501 of Fig 5); and a first sidewall extended between the first peninsula and the chamber and a second sidewall extended between the second peninsula and the chamber (wall of 503 and wall of 501 of Fig 5)."

15. Regarding claim 16, Burke et al. disclose "the first sidewall is oriented at a first angle to the chamber and the second sidewall is oriented at a second angle to the chamber, wherein the second angle is less than the first angle (the angle between the

Art Unit: 2861

wall of 501 and the chamber is less than the angle between the wall of 503 and the chamber in Fig 5)."

16. Regarding claim 17, Burke et al. disclose "the first angle of the first sidewall is in a range of approximately 43 degrees to approximately 46 degrees, and the second angle of the second sidewall is in a range of approximately 30 degrees to approximately 34 degrees (col 5 ln 13-15)."

17. Regarding claim 18, Burke et al. disclose "the first sidewall is oriented substantially parallel with the first chamfered corner of the island and the second sidewall is oriented substantially parallel with the second chamfered corner of the island (the upper right chamfered corner is substantially parallel to the wall of 503 and the lower right chamfered corner is substantially parallel to the wall of 501)."

18. Regarding claim 19, Burke et al. disclose "the island has a first side and a second side opposite the first side, wherein the first peninsula is oriented substantially parallel with the first side of the island and the second peninsula is oriented substantially parallel with the second side of the island (the upper right side of 305 is substantially parallel to the wall of 503 and the lower right side of 305 is substantially parallel to the wall of 501)."

### ***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raman in view of Pidwerbecki et al. (US 6161923).

21. Regarding claim 9, Raman discloses the claimed invention as set forth above with respect to claim 1. Thus Raman meets the claimed invention except "a combined minimum width of the first fluid channel and the second fluid channel is in a range of approximately 34 microns to approximately 42 microns."

22. Pidwerbecki et al. teach "a combined minimum width of the first fluid channel and the second fluid channel is in a range of approximately 34 microns to approximately 42 microns." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the combined width of the fluid channels within the range of approximately 34 to 42 microns. One would have been motivated to so modify Raman for the benefit of reducing the size to produce a high quality of printing by using smaller ink drops as stated by Pidwerbecki et al. in column 6 lines 4-7.

23. Regarding claim 10, Raman discloses the claimed invention as set forth above with respect to claim 1. Thus Raman meets the claimed invention except "a minimum length of each of the first fluid channel and the second fluid channel is in a range of approximately 29 microns to approximately 31 microns."

24. Pidwerbecki et al. teach "a minimum length of each of the first fluid channel and the second fluid channel is in a range of approximately 29 microns to approximately 31 microns (col 6 ln 13-14)." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the length of the channels within the

range of approximately 29-31 microns. One would have been motivated to so modify Raman for the benefit of reducing the size to produce a high quality of printing by using smaller ink drops as stated by Pidwerbecki et al. in column 6 lines 4-7.

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raman in view of Burke et al. Raman discloses the claimed invention as set forth above with respect to claim 1. Thus Raman meets the claimed invention except "the first angle of the first sidewall is in a range of approximately 43 degrees to approximately 46 degrees, and wherein the second angle of the second sidewall is in a range of approximately 30 degrees to approximately 34 degrees."

26. Burke et al. teach "the first angle of the first sidewall is in a range of approximately 43 degrees to approximately 46 degrees, and wherein the second angle of the second sidewall is in a range of approximately 30 degrees to approximately 34 degrees (col 5 ln 13-15)." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the angles of the sidewalls fall in a range of approximately 43 to 46 degrees and approximately 30 to 34 degrees. One would have been motivated to so modify Raman for the benefit of creating a configuration that results in a higher rate of available printing since the ink chamber is not starved for ink as stated by Burke et al. in column 5 lines 5-11.

27. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. in view of Raman. Burke et al. disclose the claimed invention as set forth above with respect to claim 19. Thus Burke et al. meet the claimed invention except "a width of the first fluid channel along the first chamfered corner and the first side of the island is



Art Unit: 2861

substantially constant, and a width of the second fluid channel along the second chamfered corner and the second side of the island is substantially constant.”

28. Raman teaches “a width of the first fluid channel along the first chamfered corner and the first side of the island is substantially constant, and a width of the second fluid channel along the second chamfered corner and the second side of the island is substantially constant (see the substantially constant widths of channels 301’ and 303’ of Fig 4).” It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have substantially constant channels widths. One would have been motivated to so modify Burke et al. for the benefit of creating a more constant flow rate of the ink within the channels.

29. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burke et al. in view of Pidwerbecki et al.

30. Regarding claim 22, Burke et al. disclose the claimed invention as set forth above with respect to claim 13. Thus Burke et al. meet the claimed invention except “a combined minimum width of the first fluid channel and the second fluid channel is in a range of approximately 34 microns to approximately 42 microns.”

31. Pidwerbecki et al. teach “a combined minimum width of the first fluid channel and the second fluid channel is in a range of approximately 34 microns to approximately 42 microns.” It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the combined width of the fluid channels within the range of approximately 34 to 42 microns. One would have been motivated to so modify Burke

Art Unit: 2861

et al. for the benefit of reducing the size to produce a high quality of printing by using smaller ink drops as stated by Pidwerbecki et al. in column 6 lines 4-7.

32. Regarding claim 23, Burke et al. disclose the claimed invention as set forth above with respect to claim 13. Thus Burke et al. meet the claimed invention except "a minimum length of each of the first fluid channel and the second fluid channel is in a range of approximately 29 microns to approximately 31 microns."

33. Pidwerbecki et al. teach "a minimum length of each of the first fluid channel and the second fluid channel is in a range of approximately 29 microns to approximately 31 microns (col 6 ln 13-14)." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the length of the channels within the range of approximately 29-31 microns. One would have been motivated to so modify Burke et al. for the benefit of reducing the size to produce a high quality of printing by using smaller ink drops as stated by Pidwerbecki et al. in column 6 lines 4-7.

34. Claims 11 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goldberg whose telephone number is 571-272-2728. The examiner can normally be reached on Monday through Friday, 9AM-5PM.

Art Unit: 2861

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJG



April 25, 2006

**Binh Nguyen**  
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